PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43*bis*.1)

Date of mailing *(day/month/year)* see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference see form PCT/ISA/220	**FOR FURTHER ACTION** See paragraph 2 below

International application No. PCT/GB2005/000510	International filing date *(day/month/year)* 10.02.2005	Priority date *(day/month/year)* 12.02.2004

International Patent Classification (IPC) or both national classification and IPC
G06F17/30

Applicant
MAGENTA CORPORATION LTD

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1. This opinion contains indications relating to the following items:

   ☒ Box No. I   Basis of the opinion

   ☐ Box No. II   Priority

   ☐ Box No. III   Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

   ☐ Box No. IV   Lack of unity of invention

   ☒ Box No. V   Reasoned statement under Rule 43*bis*.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

   ☐ Box No. VI   Certain documents cited

   ☐ Box No. VII Certain defects in the international application

   ☐ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

   If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1*bis*(b) that written opinions of this International Searching Authority will not be so considered.

   If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

   For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA: European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer Díaz de Lezana, C Telephone No. +31 70 340-4611

Form (PCT/ISA/237) (Cover Sheet) (January 2004)

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

International application No.
PCT/GB2005/000510

Box No. I   Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

    ☐ This opinion has been established on the basis of a translation from the original language into the following language   , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:

    a. type of material:

        ☐   a sequence listing

        ☐   table(s) related to the sequence listing

    b. format of material:

        ☐   in written format

        ☐   in computer readable form

    c. time of filing/furnishing:

        ☐   contained in the international application as filed.

        ☐   filed together with the international application in computer readable form.

        ☐   furnished subsequently to this Authority for the purposes of search.

3. ☐   In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments:

Box No. V   Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

   Novelty (N)   Yes: Claims   3-10, 14-23, 25
                                        No: Claims   1,2,11-13, 24, 26

   Inventive step (IS)   Yes: Claims
                                        No: Claims   1-26

   Industrial applicability (IA)   Yes: Claims   1-26
                                        No: Claims

2. Citations and explanations

   see separate sheet

Re Item V.

1   Reference is made to the following documents:

D1: RZEVSKI G: "On Multi-Agent Systems and Distributed Intelligence"[Online] 18 November 2002 (2002-11-18), pages 1-10, XP002325202

D2: WO 03/067432 A (MAGENTA CORPORATION LTD; RZEVSKI, GEORGE; SKOBELEV, PETER) 14 August 2003 (2003-08-14)

2.   The present application does not meet the criteria of Article 33(1) PCT, because **the subject-matter of claim 1 is not new** in the sense of Article 33(2) PCT.

Document D1 discloses (the references in parentheses applying to this document):
A method of searching for data patterns ("searches for useful patterns in data", p. 9, line 20).
In D1 "agents are assigned to records" (p. 9, line 21). The term "records" implies the idea of structured data, i.e. of a database or more generically, of a **data store holding a plurality of data records**. The method of D1 is "particularly suitable for dynamic clustering under conditions of frequent arrival of new data" (p. 9, lines 22-23). The data store can be thus regarded as a **dynamically changing data store.**

D1 discloses a method of "knowledge discovery", "where agents allocate data to clusters, to obtain meaningful patterns" (p. 5, line 14). This method is described as dealing with a particular case in the more general domain of resource allocation problems (p. 5, lines 1-19). In the context of D1, each new data record to be allocated is generically called "demand" and the already existing clusters / records are called "resources". According to D1, "an agent is assigned to ... each demand created" and "to each resource available" (p. 5, line 3), i.e. a new data agent is created for each new data record that arrives at the system.

The method of D1 therefore comprises:
creating a new data agent for each new data record that arrives at the data store ("agents are assigned to records", "whenever a new record becomes

available...", p. 9, lines 20-25; "an agent is assigned to each demand created", p. 5, line 3).

The new data agent is implemented as an executable program ("intelligent agents are computer programs", p. 4, line 20) **having a decision engine** ("an agent achieves its goal by ... deciding how to react; implementing decisions", p. 4, lines 31-32).

Agents in D1 are "given the task to search for similar records with a view to forming clusters" (p. 9, lines 21-22). The task of searching for similar records implies the existence of a similarity measure for cluster determination (the cluster valuation formula). Therefore, **the decision engine** of the data agents of D1 (the "mechanism for selecting the most appropriate behaviour", p. 2, line 31) is **operable to match the represented data record with other data records based on a data cluster valuation formula.**

Agents in D1 "negotiate among themselves how to make every step towards the goal" (p. 4, last paragraph), the goal being "to search for similar records with a view to forming clusters" (p. 9, lines 21-22). **The new data agent** therefore **negotiates with any existing agents in the system to form a cluster of data records**, the clusters **representing said data patterns.**

Therefore, D1 discloses all the features of claim 1.

3. The same reasoning therefore applies, mutatis mutandis, to the subject-matter of corresponding **claims 12, 24, 26**, which are also considered **not new.**

4. The present application does not meet the criteria of Article 33(1) PCT, because the **subject-matter of claim 18 does not involve an inventive step** in the sense of Article 33(3) PCT.

4.1. Document D1 is still regarded as being the closest prior art, and discloses (see above section 2):
    A data agent for organising data records (in clusters), **the data agent representing a data record and comprising:**

a negotiating interface for communicating with other agents representing data records; and
a decision engine operable to determine when a record is a match (similar) based on a cluster valuation formula and to form a cluster of the represented data record and the matching data record.

4.2. The subject-matter of claim 18 therefore differs from this known from D1 in that: the data agents of claim 18 comprise an agent descriptor implemented as an executable program and comprising a set of record parameters defining the type of data record it represents and an agent body implemented as an executable program and comprising the negotiating interface, whereas document D1 is silent about the specific implementation of the data agents.

4.3. The problem to be solved by the present invention may therefore be regarded as how to implement the internal agent architecture.

4.4. When confronted with the above problem, the skilled person would look for a document dealing with the implementation of multi-agent systems, particularly in the context of D1, and preferably, for any document disclosing the "architecture of a MagentA Multi-Agent System" referred to in fig. 1 of D1. The skilled person would find D2, by MAGENTA CORPORATION LTD., whose object is "to provide a modelling technique, and components associated therewith, capable of the dynamic allocation of resources to a system" (see D2, p. 2, lines 9-11). In incorporating the teachings of D2, he would arrive at a data agent comprising all the features of claim 18 without recourse to inventive skill.

5. A corresponding objection applies to independent **claim 19**, which is also considered **not inventive**.

6. Dependent **claims 2-11, 13-17, 20-23, 25** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).